S-AVL 3 application user manual

V1.1

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1. Introduction

S-AVL application is software used to connect to the server and retrieve and display information that FM4 stores there.

S-AVL user manual provides information needed to fully understand and operate S-AVL application. Here you will find application installation guide, interface, reports, configuration and event description, operation list. Note, that some operations or functions can be enabled or disabled and may not be available in application.

2. Getting started

2.1 PC requirements

S-AVL application runs on a PC with MS Windows XP or MS Windows Vista with latest service packs. MS .NET Framework v3.5 SP1 and Crystal Reports are also necessary components.

S-AVL application supports MS MapPoint (copyright © 2008 Microsoft) or any MapX (copyright © 2008 MapInfo Corporation) maps (additional maps have to be installed on users PC).

2.2 .NET Framework installation

Download .NET Framework 3.5 SP1 from Microsoft website and install it (url: http://www.microsoft.com/downloads/thankyou.aspx?familyId=ab99342f-5d1a-413d-8319-81da479ab0d7&displayLang=en

2.3 Crystal Reports installation

Download and install Crystal Reports for .NET Framework (url: http://sfera-engineering.kz/).

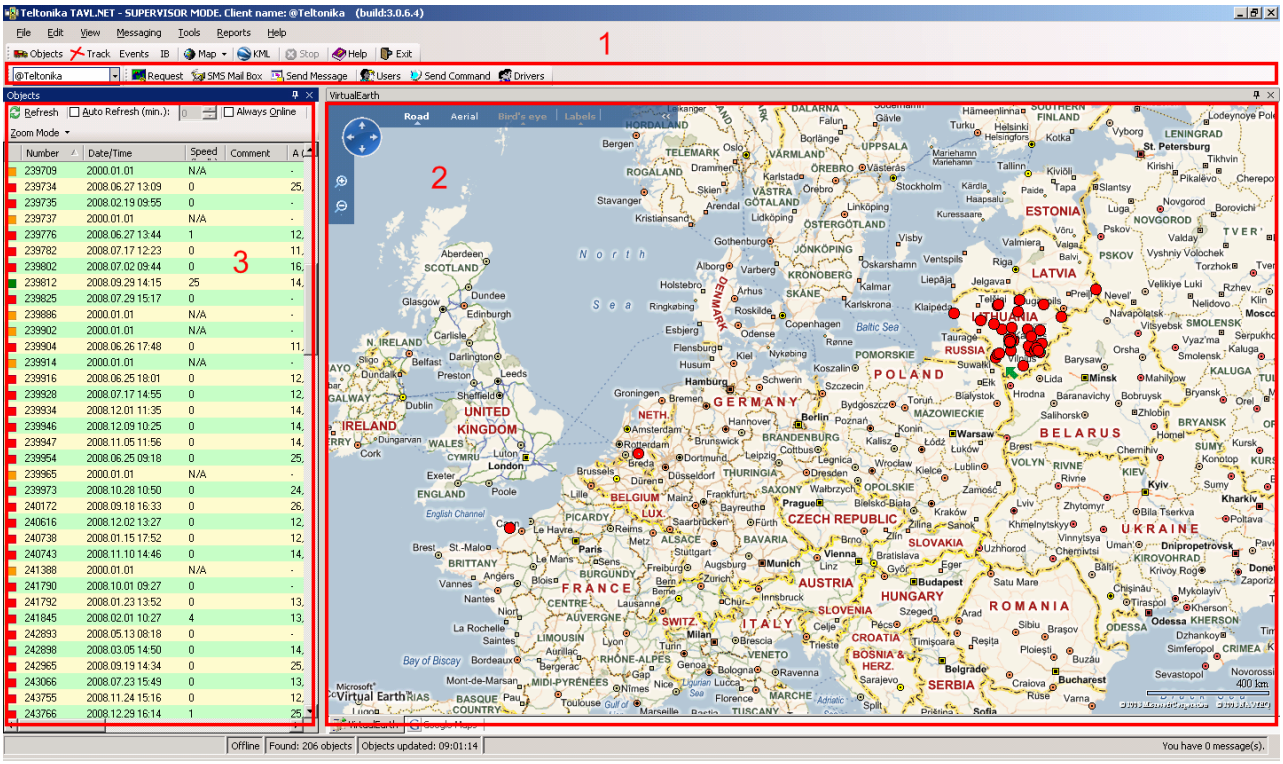
2.4 SAVL application installation

Downloads and extract latest available version of TAVL application (url: http://sfera-engineering.kz/).

2.5 Launching SAVL application

Launch tavl.exe. Enter your login name and password. Additional settings can be found after clicking button: client name, destination server and language.

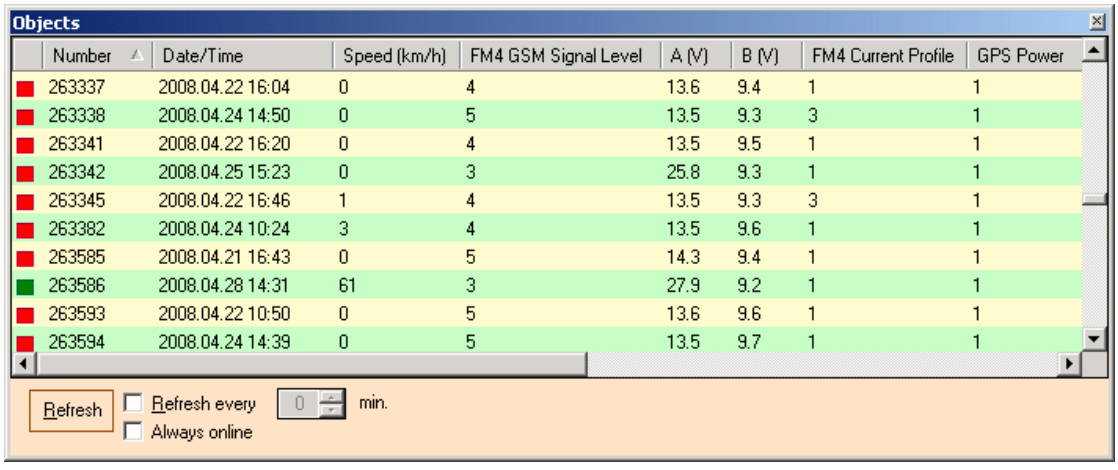
3. Interface



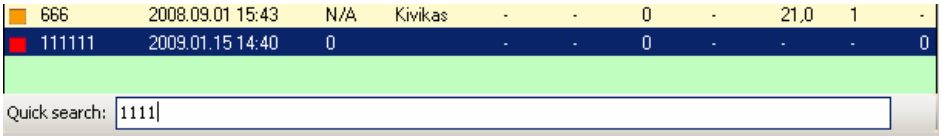
S-AVL application consists of three basic parts:

1. Toolbar;
2. Object window (may contain track or event window);
3. Map window.

3.1 Objects



Object window contains a list of all available objects that are available for the client. Red color indicates idle state, green – moving. Date column shows timestamp for the latest coordinate received from device along with other additional properties (if any). To find an object by his number, simply start typing in the "Object window" objects number.



After clicking 'Objects' in toolbar, S-AVL displays them on a map. Left-click on the object in the list centers view on that object. Right-click on the object displays the following menu:

- Info – displays object information entered in database
- Hide – hides current object from visible list ('Objects' or 'Refresh' has to be clicked to take effect)
- Unhide All – reveals all hidden objects
- Edit Columns – ability to set up available columns – order, size, etc.
- Configuration – opens object configuration menu (see below)
- GeoFence - opens FM GeoFence menu
- Edit Object – ability to modify object number and comments
- Send Command – displays available SMS commands for FM

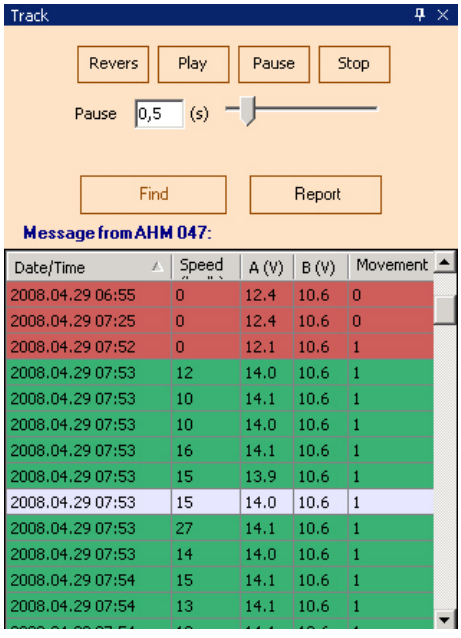
'Refresh' button displays the latest information available on server. Option 'Refresh Every' allows you to enter time interval in minutes for automatic refresh function. 'Always Online' refreshes data every 15 seconds.

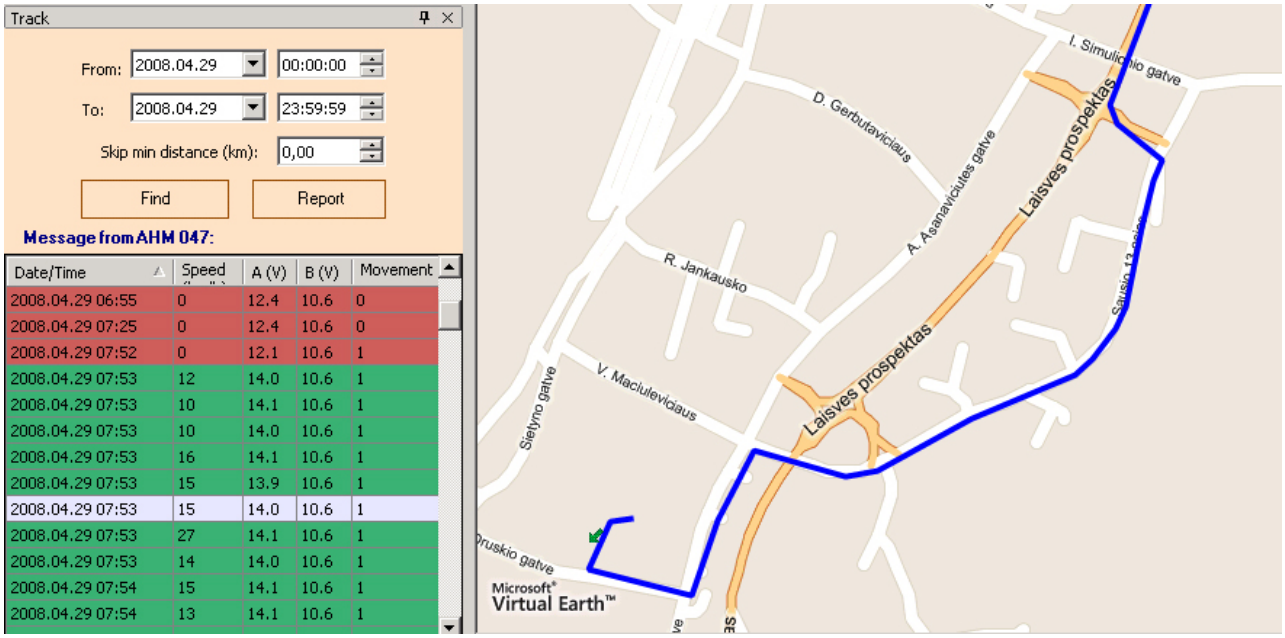
3.2 Track

'Track' button in toolbar displays additional track window in object list. Choose an object, set time interval and click 'Find' to see the track of the object for that period. All additional properties are displayed as well for every timestamp. 'Skip Min Distance' is used to discard records that are too close to each other – you can enter minimum distance between coordinates to be displayed. Left-click on the list centers the map on that record. Right-click allows to modify columns and to switch to 'Replay' mode. If two coordinates are selected while holding 'Ctrl' key, application calculates distance between them and (if available) fuel consumption for that period.

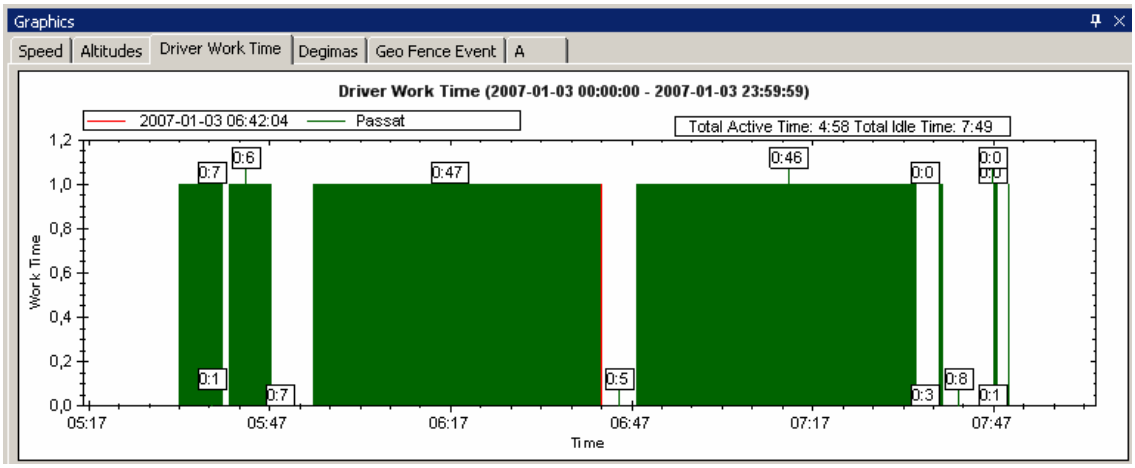
Replay mode displays each coordinate for defined time interval in 'Pause' field creating a live review the track. 'Play', 'Pause' and 'Stop' buttons are used to start, hold and stop preview, while 'Reverse' button replays track from the end to beginning.

'Reports' button is explained in 'Graphic Reports' chapter (see below).

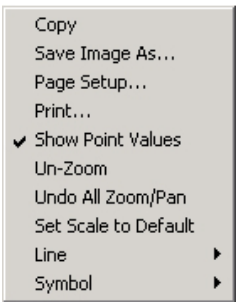




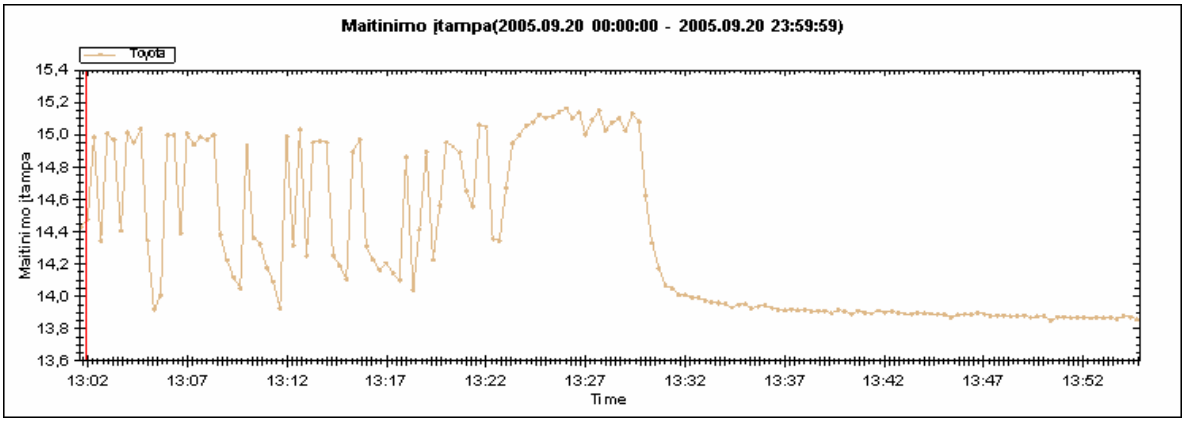
3.3 Graphic Reports



After clicking 'Track' button and generating a track of the object a 'Reports' button appears. This opens a new window with all properties changes in time scale graphics – speed, power voltage, CAN bus information, etc. Information provided here is same as displayed in 'Track' window, except that it is in graphic mode. Left-click on a record in 'Track' window shows a vertical line on a graph at specified timestamp.

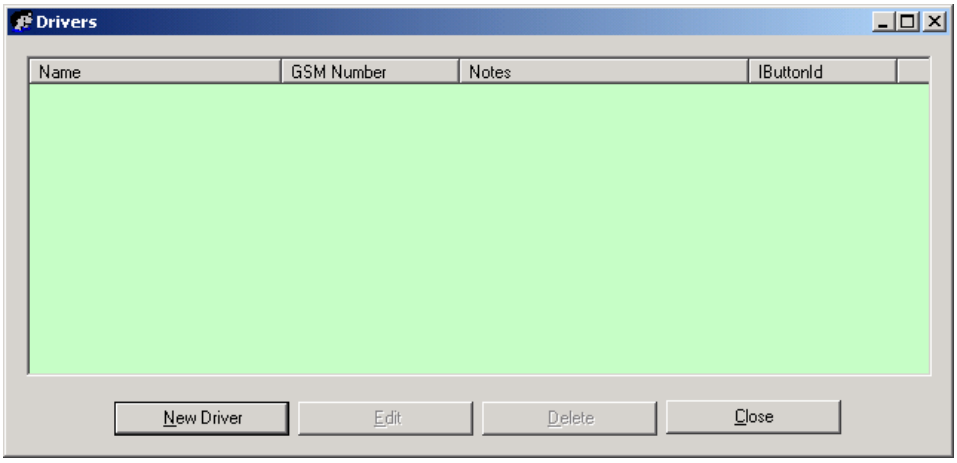


Some functions to manipulate the view of graphics are available. Middle button of a mouse increases or decreases the scale of timeline, right-click displays a view settings menu. Image can be copied to clipboard, saved as picture format or sent to printer. It is also possible to choose point symbols and size for them as well as line filling options. 'Set Scale To Default' is used to set back to default view.



3.4 SMS operations

SMS operations have several buttons dedicated: 'SMS mailbox', 'Send Message', 'Send Command' and 'Drivers'.

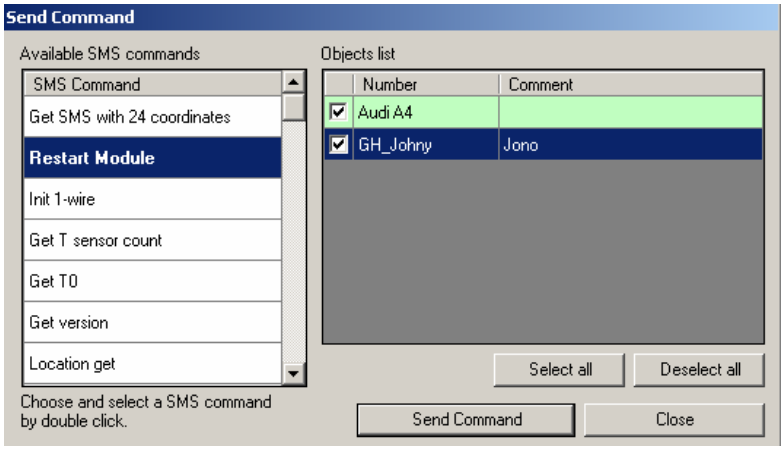


'Drivers' allows a user to create virtual SMS receivers. These receivers are used in following cases:

1. To enter a vehicle driver name and GSM number for a possibility to send SMS from S-AVL application;
2. To enter a device number and GSM number for a possibility to send FM commands to the unit;
3. To enter object number or driver name and iButton ID for identification.

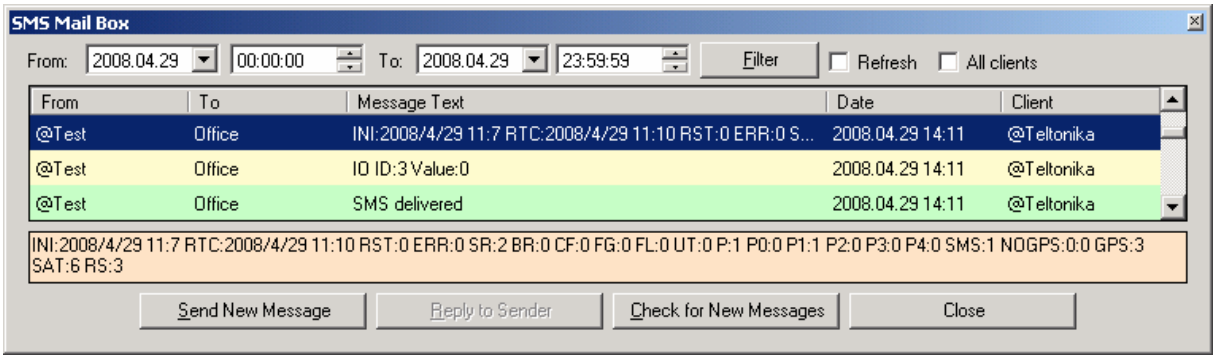
'Send Command' allows a user to send predefined commands to FM units. Commands are entered on database using Management interface (see S-AVL Management User Manual).

To send SMS command to more than one unit, the SMS command must be common to these units.



'Send Message' allows a user to send any text message to receiver defined in 'Drivers' menu. These can include configuration messages for FM unit, simple text messages for drivers, or any other SMS message.

'SMS Mailbox' provides a simple SMS monitoring tool for sent and received messages. Some configuration messages request certain information from FM units which is usually sent by SMS. This information can be seen in SMS mailbox window along with delivery reports (if activated). A time interval for sent and received messages can be set. 'Refresh' option allows periodic update of SMS mailbox window, 'All Clients' allow to see all messages from all available clients on the server.



3.5 Other operations

'Map' button allows turning on or off available maps on S-AVL application.

After clicking 'KML' button, S-AVL application launches Google Earth (copyright © 2008 Google) application and exports current view of map – all objects or track of selected object. Note that Google Earth has to be installed on a PC for this option to be available. Same can be done by clicking 'File -> Export -> To KML File'.

'Stop' button cancels current job – object or track loading.

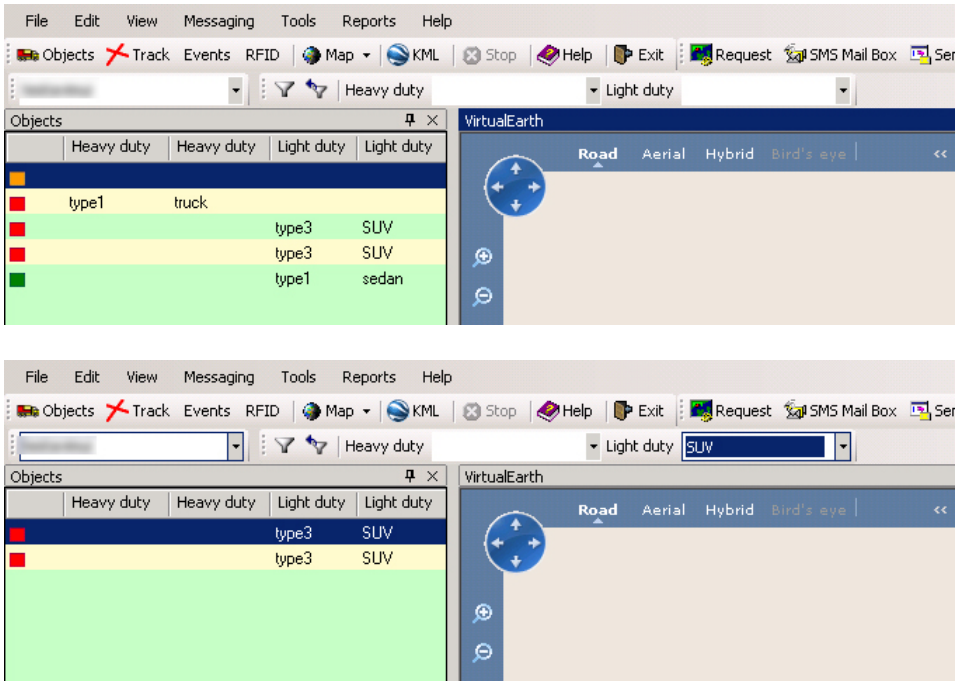
'Users' allows creating a new S-AVL application login for active client. Enter new username and password and choose available functions. Currently logged in user is able to change the settings of account using 'Edit' -> 'Login' menu.

'Events' displays a new window with preconfigured events. They can be received for a defined period of time from selected or all objects available for the client. Event configuration is explained in configuration chapter (see below).

All data (object list with subscribed properties or track information) can be exported to .CSV file. Click 'File -> Export -> To CSV File' and choose a folder to save it.

3.6 Advanced filtering

S-AVL application has ability to set certain categories for every client. These categories can have different sub-categories that can be attached for every object. If this functionality is enabled, S-AVL application has additional filter settings in toolbar. Vehicle identification to certain category or sub-category is done using S-AVL application.

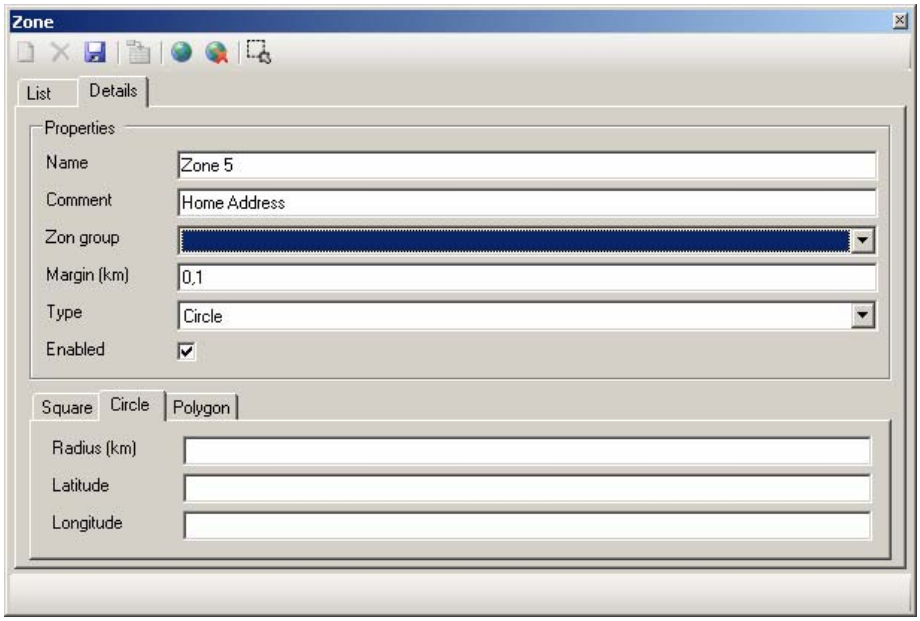

File Edit View Messaging Tools Reports Help
Objects Track Events RFID Map KML Stop Help Exit Request SMS Mail Box
Heavy duty
Light duty
Objects
Heavy duty Heavy duty Light duty Light duty
type1 truck
type3 SUV
type3 SUV
type1 sedan
VirtualEarth
Road Aerial Hybrid Bird's eye
File Edit View Messaging Tools Reports Help
Objects Track Events RFID Map KML Stop Help Exit Request SMS Mail Box
Heavy duty
Light duty
SUV
Objects
Heavy duty Heavy duty Light duty Light duty
type3 SUV
type3 SUV
VirtualEarth
Road Aerial Hybrid Bird's eye

4. Operations

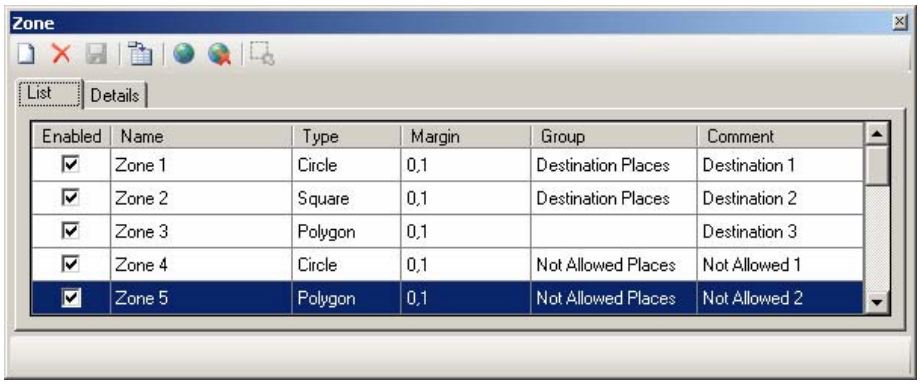
4.1 GeoFence

When coordinates are sent to the server, they are proceeded using application's algorithms. If coordinate is in the specified area, a notification is sent.

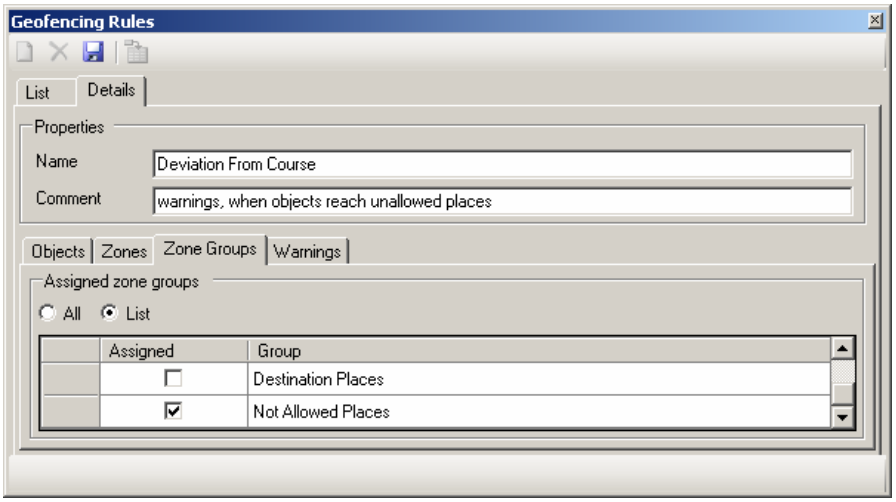
In the toolbar click 'Tools' – >'Geofencing'.



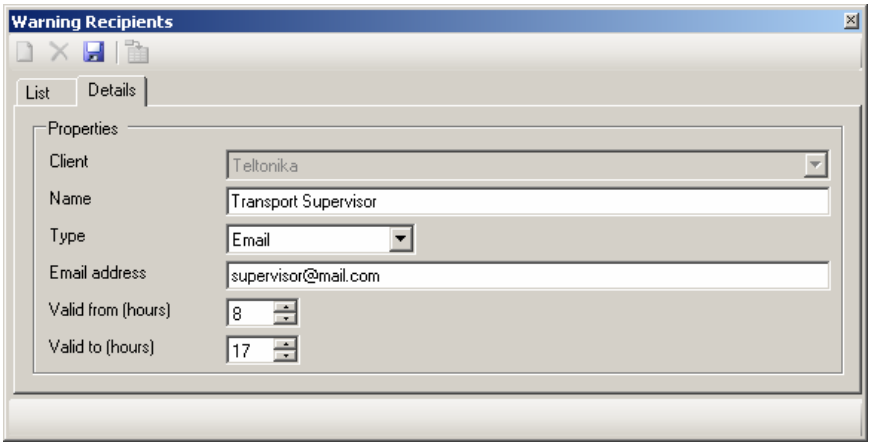
'Zones' menu allows you to create new, edit or view existing zones, which can be in shape of quadrangle, circle or polygon. To create new area, click . Enter name, attach to the zone group (optional) and specify coordinates by entering them in the fields or click and choose the area on the map window. For quadrangle two corner points are required, for circle - center and radius. If you choose the polygon, double click while selecting last point and application will automatically connect first and last points specified.

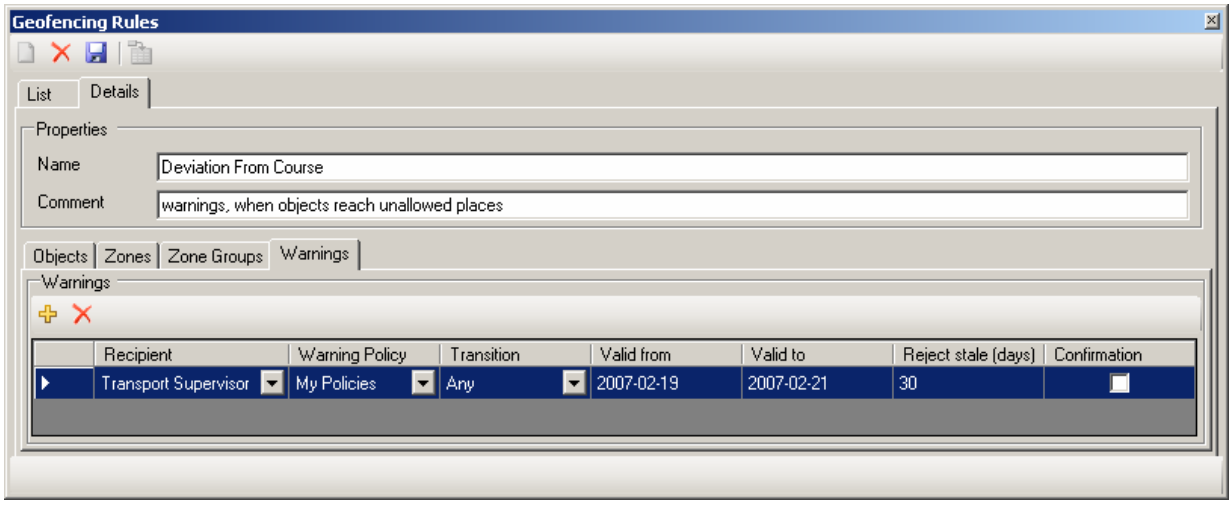


When you click 'Zone Groups' you will be able to attach zones to groups. This makes object management more easy, because you can specify groups as destination addresses, not allowed places, checkpoints and set different messages to be sent for each group.



When you are setting Geofencing rules, you can choose which objects to monitor and specify included zones or zone groups. Click 'Warnings' and choose recipients and message sending policies. These two are specified in Warnings menu (click 'Tools' -> 'Warnings' -> 'Warning Recipients'). Also set parameter in 'Transition' field for message sending when objects enters or leaves (or both) area, specify oldest possible warning message in 'Reject State' field and set if messages require user confirmation in 'Confirmation' field.





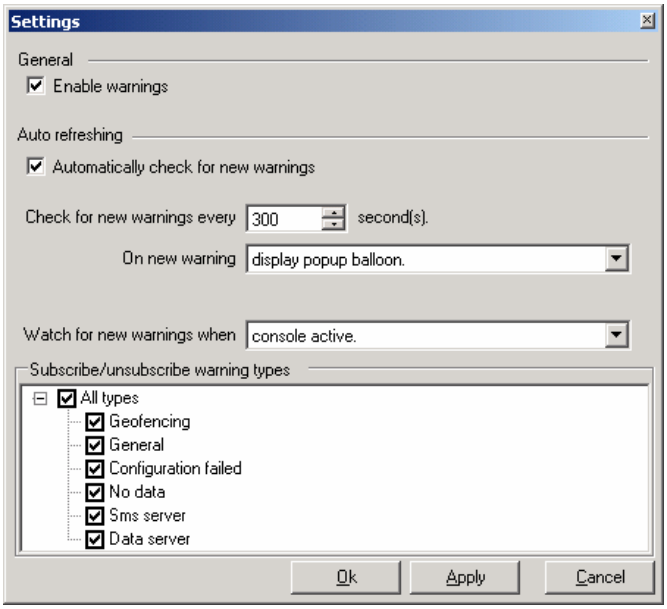
If you want to view messages in S-AVL application, click 'View' –> 'Warning Console'. In the new window Geofence warning along with other generated waning can be viewed. Settings, how

information should be displayed are made in 'Settings' window – click to open it. You can define which messages should be displayed, time interval to check for new messages and how should they be displayed (more detailed explanation in chapter below).

4.2 Events and Warning Console

Events are displayed in separate window, when FM configuration has certain events defined (see Configuration chapter below). If current value of any property exceeds or drops below the defined range, an event is generated.

Warning console is able to display these events if it is enabled. Enter time interval to check for new events, and define what should happen when new event is received. Different type of warnings can be chosen to view.



4.3 Filtering

Loading lots of objects takes more time and sometimes it can be very confusing. Filtering lets you choose which object you want to view, and hides the rest. When refreshing objects, data is sent only about those that are marked, so it takes less time. In the S-AVL toolbar click on 'View' and 'Filter' or hit Ctrl + F. In the new window click on object you want to be displayed and click 'Ok'.

4.4 Options

'Options' allows you to customize S-AVL applications settings. In the 'View' menu choose 'Options' or hit F9.

Stop Speed - speed value at which the object is treated as not moving. This is used when coordinates error occurs and object is displayed on new location, it should not be indicated as changing its stopping point.

Events menu – sets a sound used with warnings, sets if passive data is displayed in new window when its state changes or with all data in the objects window. Interval sets the period in seconds when the data is to be refreshed.

GeoFence menu - settings let you specify line colors and width.

Graphic Parameters menu - these settings define same graphic reports parameters as right-clicking on them (see Graphic reports above) - fonts and their sizes, symbol types and sizes, etc. 'Work Time Graphic Min Time' and 'Work Time Graphic Min Speed' define minimum time and speed values at which object's engine is being treated as working.

'Use iButton' – enables iButton column in object and track windows.

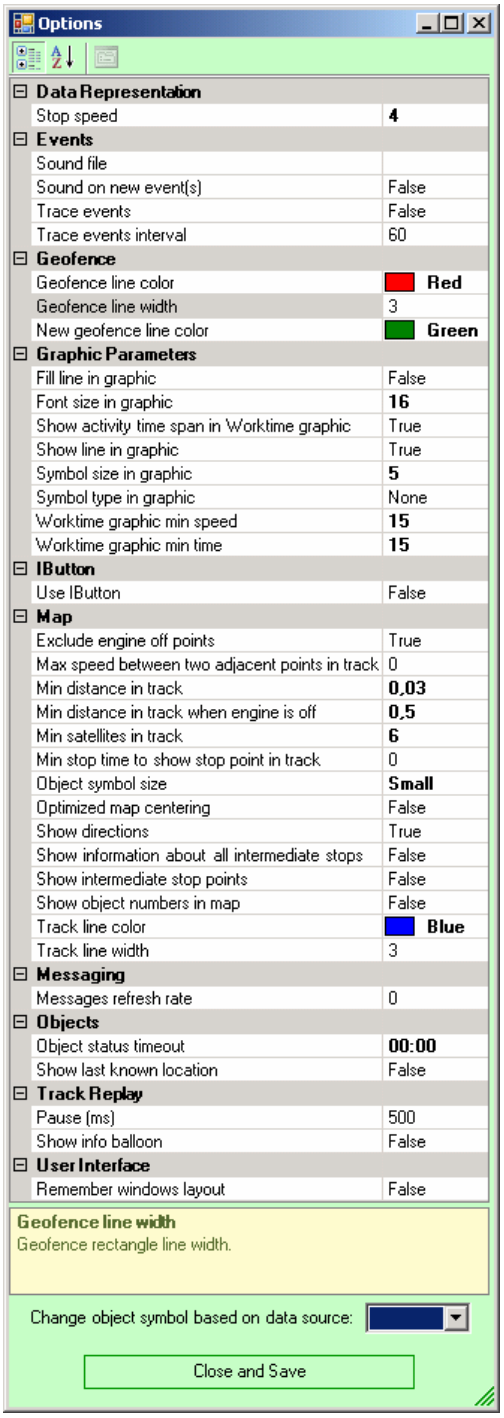
'Map' menu defines visual parameters in the S-AVL map window. 'Exclude Engine Off Points' sets object to not moving when engine is turned off. With this parameter 'Min Distance In Track When Engine Is Off' is set in kilometers to indicate how far object can move and still not be treated as moving. 'Min Distance In Track' sets minimum distance from one point to another in the map. 'Min Satellites In Track' specifies how many satellites module should be using when setting its position. Note that minimum four satellites are used, but more - means better accuracy.

'Messages Refresh Rate' - rate at which data is refreshed in mailbox.

'Objects' menu - shows last known good coordination when no GPS satellites are in view.

'Remember Windows Layout' - saves windows layout in TAVL on exit.

It is also possible to set different symbols to represent the object while ignition is on or fuel counters are used.

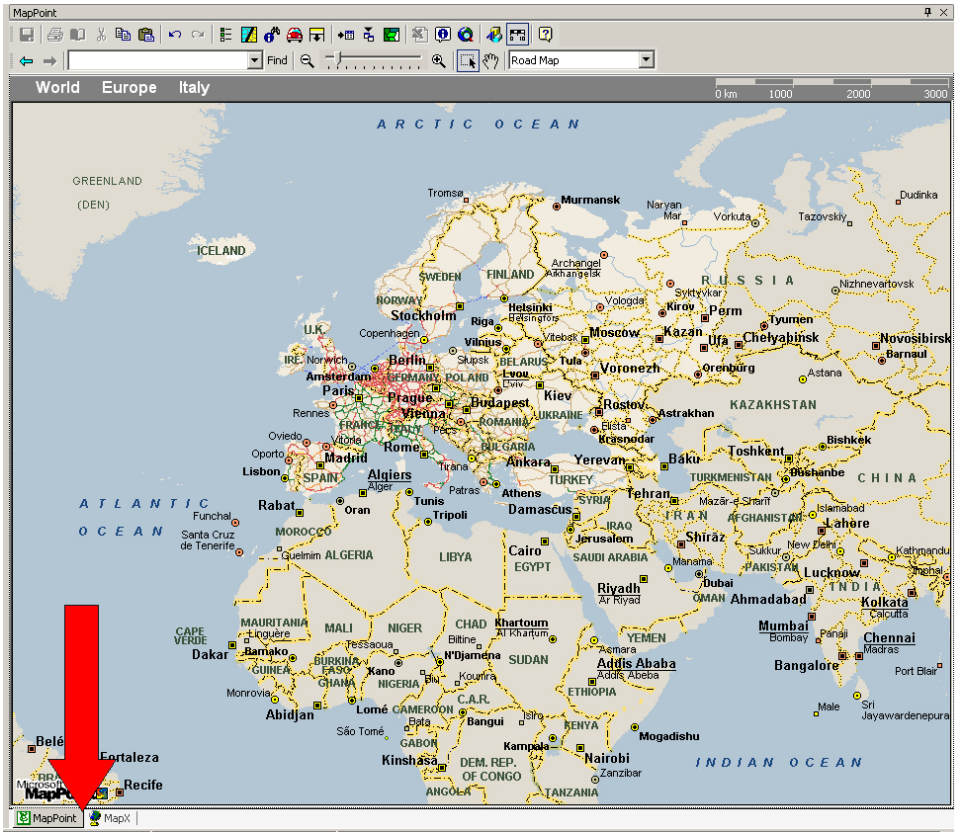

Options
Data Representation
Stop speed 4
Events
Sound file
Sound on new event(s) False
Trace events False
Trace events interval 60
Geofence
Geofence line color Red
Geofence line width 3
New geofence line color Green
Graphic Parameters
Fill line in graphic False
Font size in graphic 16
Show activity time span in Worktime graphic True
Show line in graphic True
Symbol size in graphic 5
Symbol type in graphic None
Worktime graphic min speed 15
Worktime graphic min time 15
IButton
Use IButton False
Map
Exclude engine off points True
Max speed between two adjacent points in track 0
Min distance in track 0,03
Min distance in track when engine is off 0,5
Min satellites in track 6
Min stop time to show stop point in track 0
Object symbol size Small
Optimized map centering False
Show directions True
Show information about all intermediate stops False
Show intermediate stop points False
Show object numbers in map False
Track line color Blue
Track line width 3
Messaging
Messages refresh rate 0
Objects
Object status timeout 00:00
Show last known location False
Track Replay
Pause (ms) 500
Show info balloon False
User Interface
Remember windows layout False
Geofence line width
Geofence rectangle line width.
Change object symbol based on data source:
Close and Save

4.5 MapInfo MapX maps integration

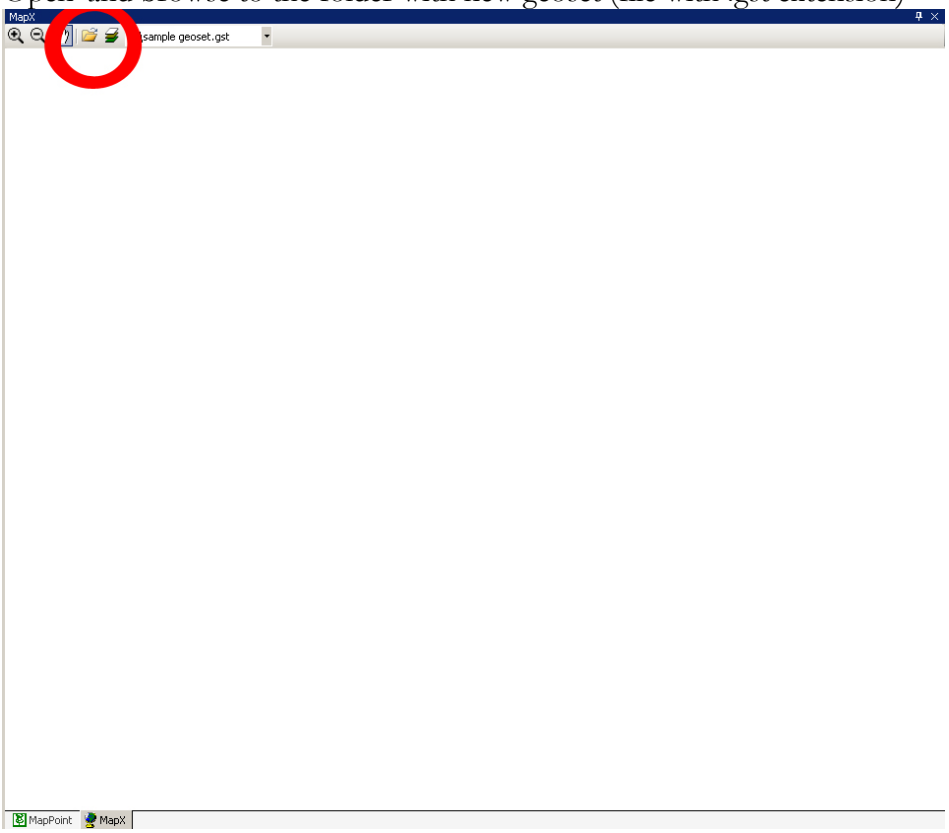
In addition to the standard software packet, MapInfo MapX (copyright © 2008 MapInfo Corporation) should be installed.

S-AVL application supports files with .GST extension. These can be compiled using MapInfo MapX packet.

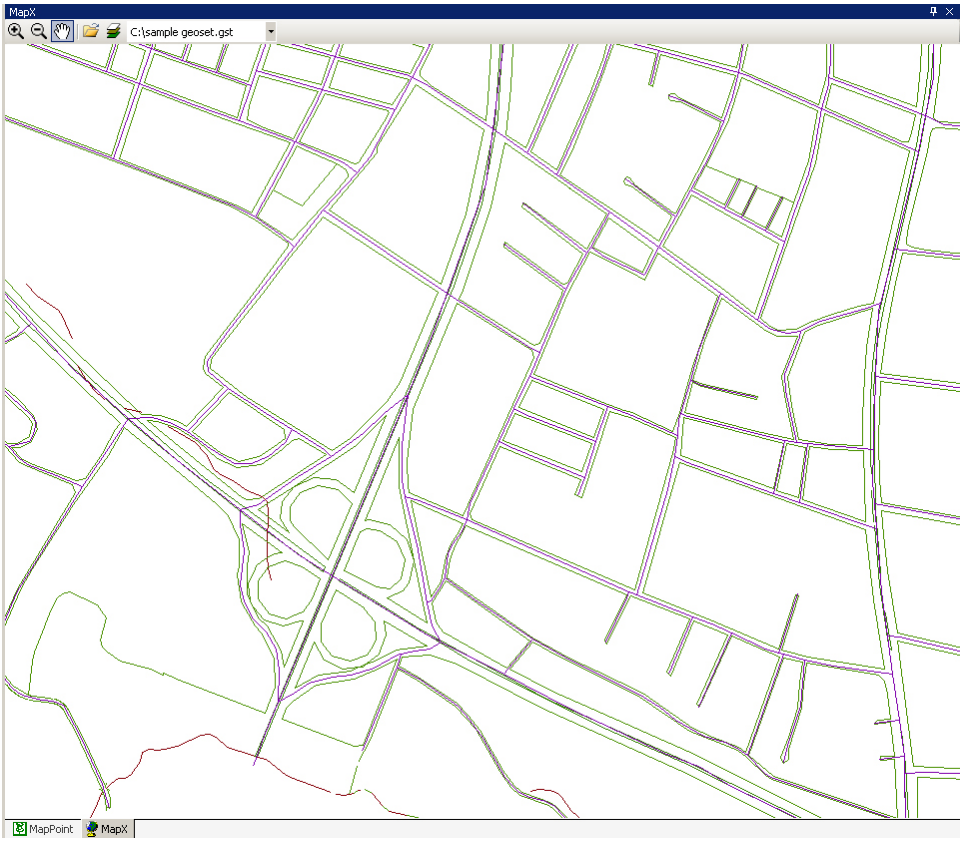
When S-AVL is launched, click on MapX icon in the lower left corner near the map window or click on 'Maps' – 'MapX' button on a toolbar.



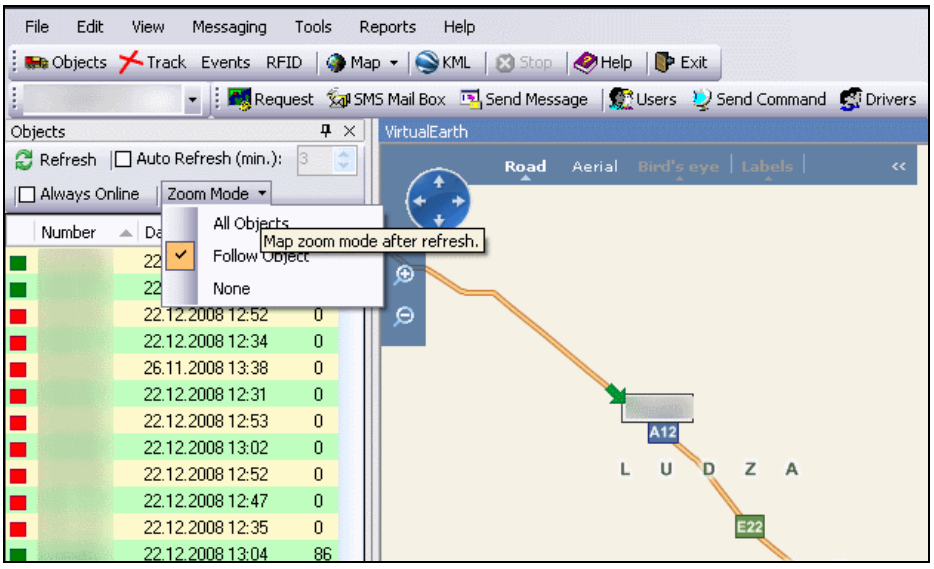
Click 'Open' and browse to the folder with new geoset (file with .gst extension)



Your new custom maps are ready to use.



4.6 Object Zooming



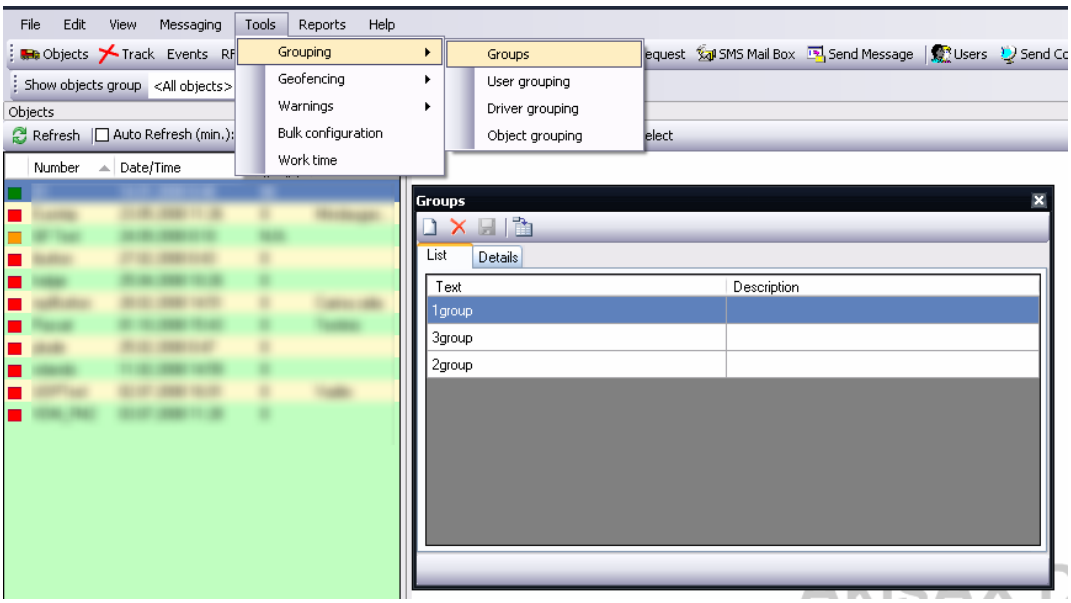
There are several zoom types available in S-AVL application:

- All Objects (zoom map to best fit all objects)
- Follow Object (leave user selected zoom level, follow selected object)
- None (Leave user selected zoom level, do not follow objects)

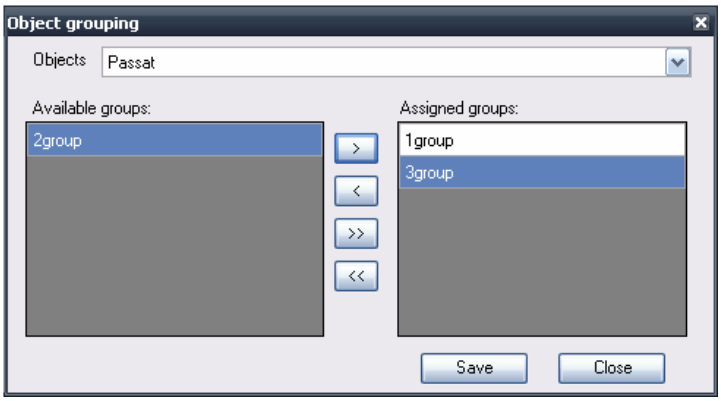
Note: this functionality os only available with MS Virtual Earth maps.

4.7 Grouping Feature

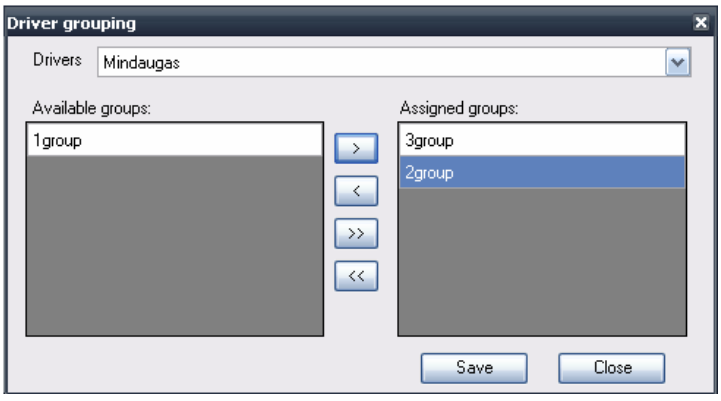
S-AVL server administrator can allow or deny 'Power User' to use Grouping feature. This feature can define that certain object or driver belongs to certain group and the simple user, which belongs to the same group can see only those objects, while Power User can see all available objects.



First decide which objects from the object list will be available for a user. Power User is allowed to create groups. Each Object can be assigned to different groups. Select objects one by one and assign a group to it. Note, that more than one group is available for one object. Object grouping is available from Tools -> Grouping -> Object Grouping.

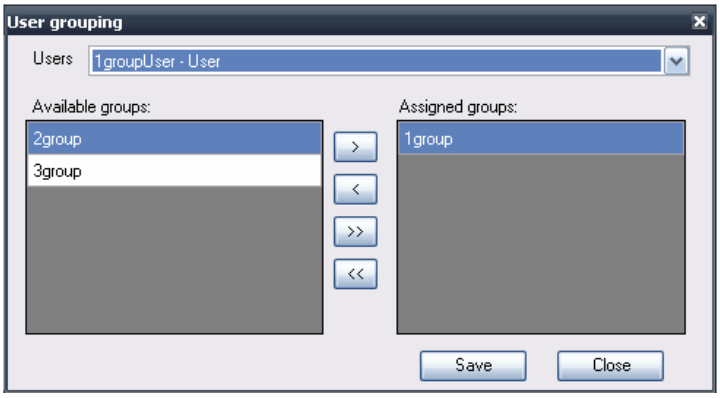


S-AVL application can also store a driver list with assigned GSM numbers and it is possible to communicate with those drivers using SMS (see SMS Communication chapter for more information). Just like objects, each driver can be assigned to different groups too. Driver grouping is available from Tools -> Grouping -> Driver Grouping



As mentioned above, Power User can create a simple user logins for S-AVL application (click Users button in the toolbar and select 'New'). Each simple user can be assigned to different groups. User

grouping is available from Tools -> Grouping -> User Grouping. The new user will be able to see only those objects that match his group.

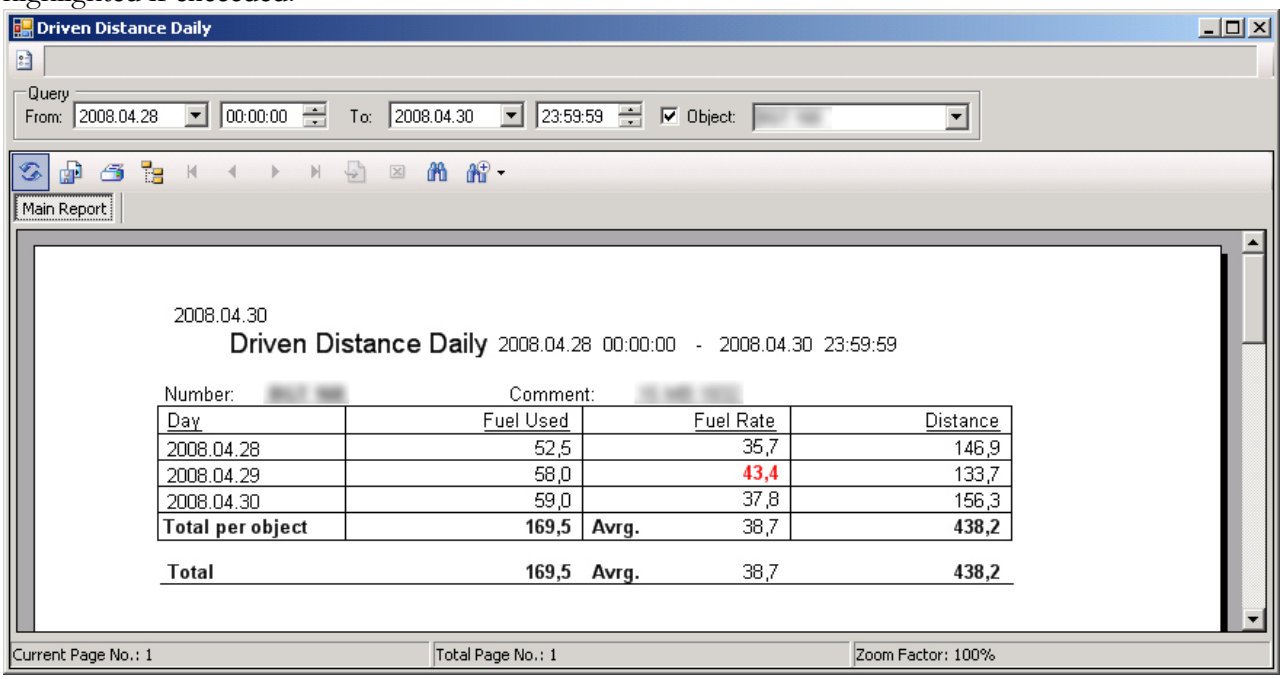


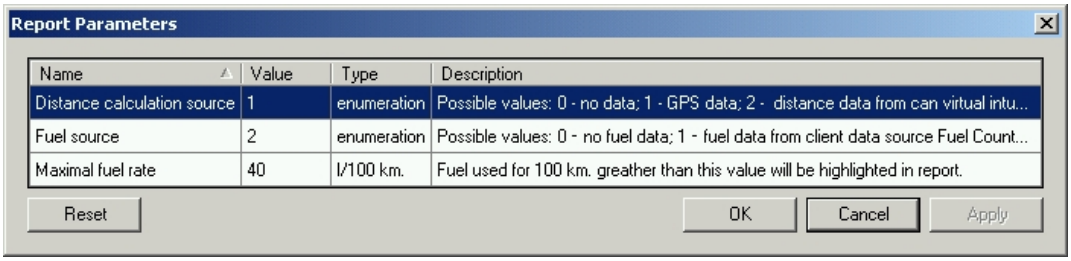
5. Statistic reports

S-AVL application has ability to generate statistic reports based on GPS data and/or external sensors or properties. These reports can be launched by clicking 'Reports' and choosing one of available.

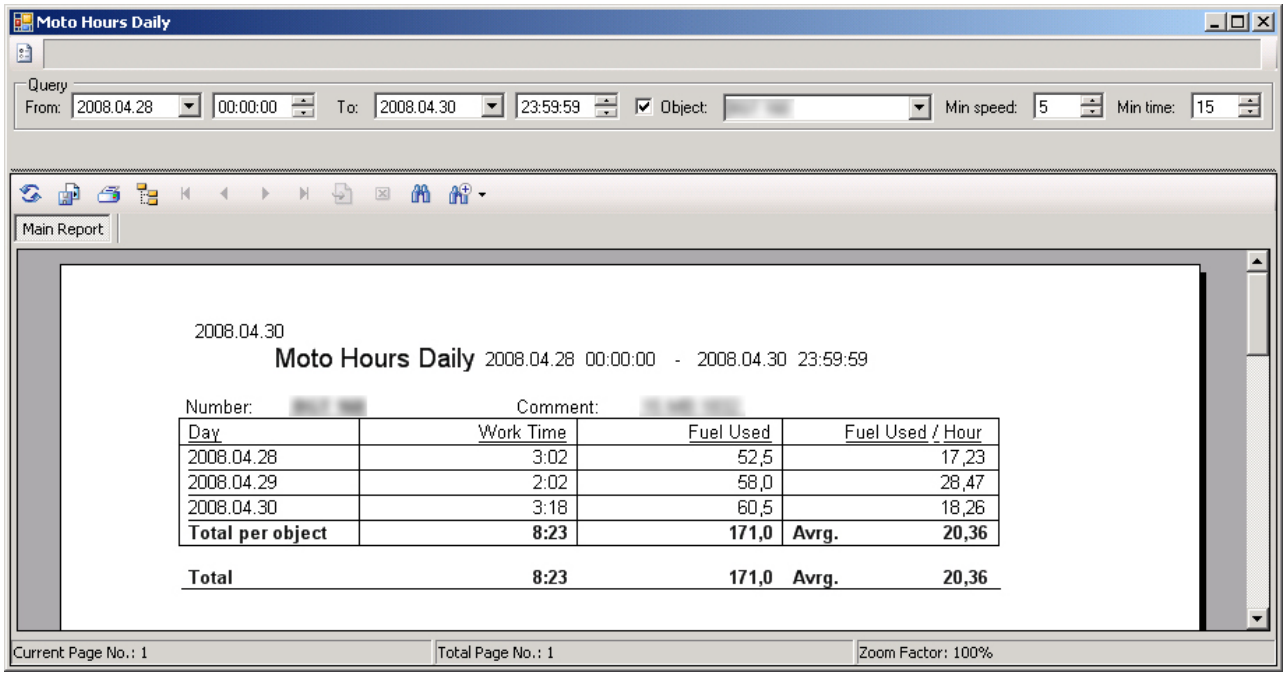
5.1 Driven Distance

Driven Distance reports contain information about total track for define time interval. If fuel measurement is present for the vehicle, this data is used to calculate total fuel used and fuel rate for 100 km. Click settings to define distance calculation – distance can be calculated using CAN or GPS data, fuel source – CAN or fuel counters information and maximum fuel rate limit, which is displayed highlighted if exceeded.


Driven Distance Daily
Query
From: 2008.04.28 00:00:00 To: 2008.04.30 23:59:59 Object:
Main Report
2008.04.30
Driven Distance Daily 2008.04.28 00:00:00 - 2008.04.30 23:59:59
Number:
Comment:
Day | Fuel Used | Fuel Rate | Distance
2008.04.28 | 52,5 | 35,7 | 146,9
2008.04.29 | 58,0 | 43,4 | 133,7
2008.04.30 | 59,0 | 37,8 | 156,3
Total per object | 169,5 | Avrg. | 38,7 | 438,2
Total | 169,5 | Avrg. | 38,7 | 438,2
Current Page No.: 1
Total Page No.: 1
Zoom Factor: 100%



5.2 Moto Hours


Moto Hours Daily
Query
From: 2008.04.28 00:00:00 To: 2008.04.30 23:59:59 Object: Min speed: 5 Min time: 15
Main Report
2008.04.30
Moto Hours Daily 2008.04.28 00:00:00 - 2008.04.30 23:59:59
Number: Comment:
Day | Work Time | Fuel Used | Fuel Used / Hour
2008.04.28 | 3:02 | 52,5 | 17,23
2008.04.29 | 2:02 | 58,0 | 28,47
2008.04.30 | 3:18 | 60,5 | 18,26
Total per object | 8:23 | 171,0 | Avrg. | 20,36
Total | 8:23 | 171,0 | Avrg. | 20,36
Current Page No.: 1
Total Page No.: 1
Zoom Factor: 100%

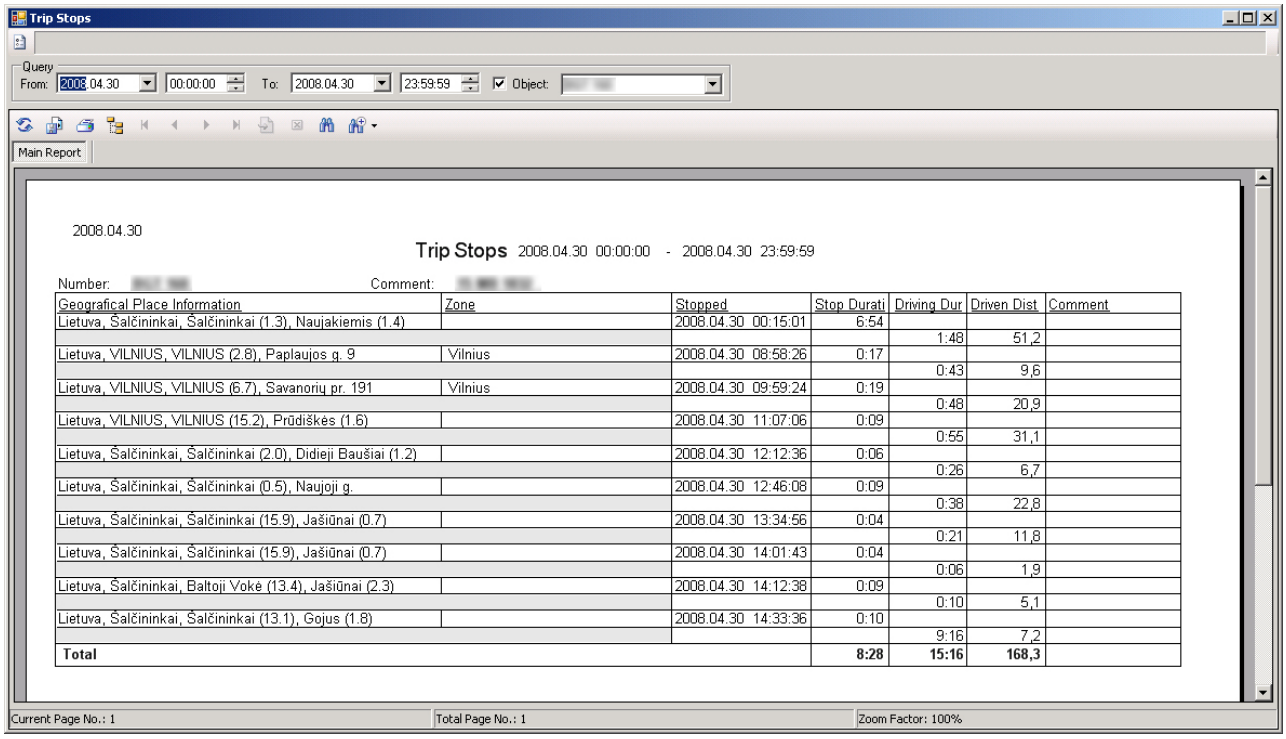
Moto Hours report calculates total time spent while driving a vehicle. Work time is calculatd when vehicle is moving at greater speed than the one defined in 'Min Speed' field. Additional settings can be made to define fuel source and timeout in case FM is configured not to send data frequently.

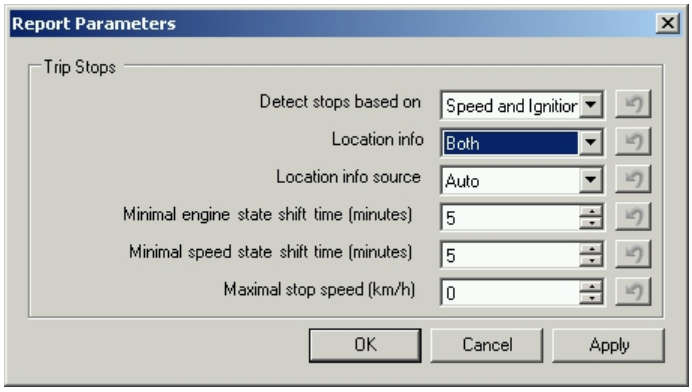
As alternative, Work Time Detailed reports provide same information more detailed.

5.3 Trip Stops

Trip Stops report is used to monitor when, where and for how long vehicle was idle. Settings include:

- 'Detect stops based on' – identifies when vehicle is considered as idle. Stops can be based on ignition (they have to be configured as 'Engine' data source) and/or speed.
- 'Location Info' – reports have ability to show the place where vehicle was idle – either locations from server database and/or location titles used in GeoFence settings.
- 'Location Info Source' – selects between available databases on server.
- 'State shift timeout' – these two fields define time intervals to check for ignition or speed changes. If value has not changed for the period of time, vehicle is considered as idle.
- 'Minimum Stop Speed' – a speed value which identifies vehicle as idle, if it not exceeded.


Trip Stops
Query
From: 2008.04.30 00:00:00 To: 2008.04.30 23:59:59 Object:
Main Report
2008.04.30
Trip Stops 2008.04.30 00:00:00 - 2008.04.30 23:59:59
Number: Comment:
Geografical Place Information | Zone | Stopped | Stop Durati | Driving Dur | Driven Dist | Comment
Lietuva, Šalčininkai, Šalčininkai (1.3), Naujakiemis (1.4) | | 2008.04.30 00:15:01 | 6:54 | | | |
| | | | | 1:48 | 51,2 |
Lietuva, VILNIUS, VILNIUS (2.8), Paplaujos g. 9 | Vilnius | 2008.04.30 08:58:26 | 0:17 | | |
| | | | | 0:43 | 9,6 |
Lietuva, VILNIUS, VILNIUS (6.7), Savanorių pr. 191 | Vilnius | 2008.04.30 09:59:24 | 0:19 | | |
| | | | | 0:48 | 20,9 |
Lietuva, VILNIUS, VILNIUS (15.2), Prūdiškės (1.6) | | 2008.04.30 11:07:06 | 0:09 | | |
| | | | | 0:55 | 31,1 |
Lietuva, Šalčininkai, Šalčininkai (2.0), Didieji Baušiai (1.2) | | 2008.04.30 12:12:36 | 0:06 | | |
| | | | | 0:26 | 6,7 |
Lietuva, Šalčininkai, Šalčininkai (0.5), Naujoji g. | | 2008.04.30 12:46:08 | 0:09 | | |
| | | | | 0:38 | 22,8 |
Lietuva, Šalčininkai, Šalčininkai (15.9), Jašiūnai (0.7) | | 2008.04.30 13:34:56 | 0:04 | | |
| | | | | 0:21 | 11,8 |
Lietuva, Šalčininkai, Šalčininkai (15.9), Jašiūnai (0.7) | | 2008.04.30 14:01:43 | 0:04 | | |
| | | | | 0:06 | 1,9 |
Lietuva, Šalčininkai, Baltoji Vokė (13.4), Jašiūnai (2.3) | | 2008.04.30 14:12:38 | 0:09 | | |
| | | | | 0:10 | 5,1 |
Lietuva, Šalčininkai, Šalčininkai (13.1), Gojus (1.8) | | 2008.04.30 14:33:36 | 0:10 | | |
| | | | | 9:16 | 7,2 |
Total | | | 8:28 | 15:16 | 168,3 |
Current Page No.: 1
Total Page No.: 1
Zoom Factor: 100%



6. Configuration

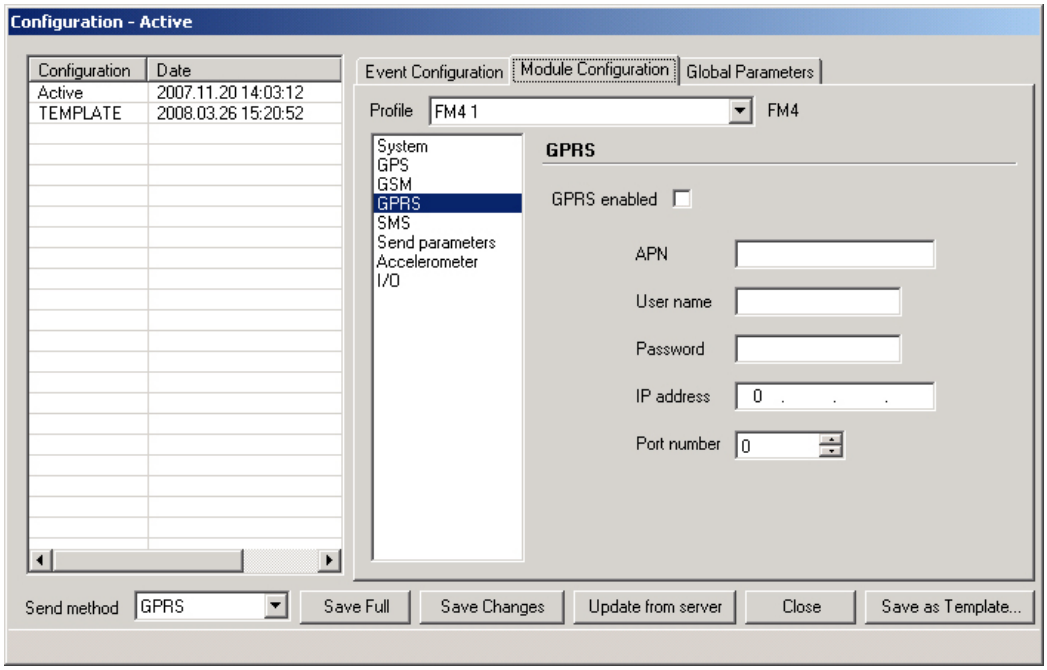
6.1 Module Configuration

S-AVL application has an interface for remote FM configuration via GPRS. Note, that current SMS username and password for FM device must mach those entered in database, else all configuration attempts will result in failure. Remote configuration can also be done by sending simple text SMS to the module with special commands (see FM4 user manual for more details). In the object list right-click on the object and choose 'Configuration'.

Configuration interface has a list of available configurations for module. These can be:

- 'Active' – currently available configuration. Note, that when new object is added, server does not receive configuration from FM device and all fields are left blank. 'Active' configuration will show currently used values only when FM device is configured with S-AVL application.
- 'Template' – this is a template configuration. 'Template' settings are not stored in FM device, but on server. A selected configuration can be saved as template for one or more modules.
- 'New' – new configuration is displayed when new settings are about to be sent to the device.

- 'Synchronizing' – a configuration that is queued for update. When saving new settings (configuration), new configuration is renamed to 'Synchronizing' until process is successful or time-out expires. If configuration is successful, then 'Synchronizing' is renamed to 'Active' and new date can be seen indicating when it was became available. If configuration is not successful, 'Synchronizing' is renamed to 'Failure'.
- 'Failure' – last unsuccessful configuration.



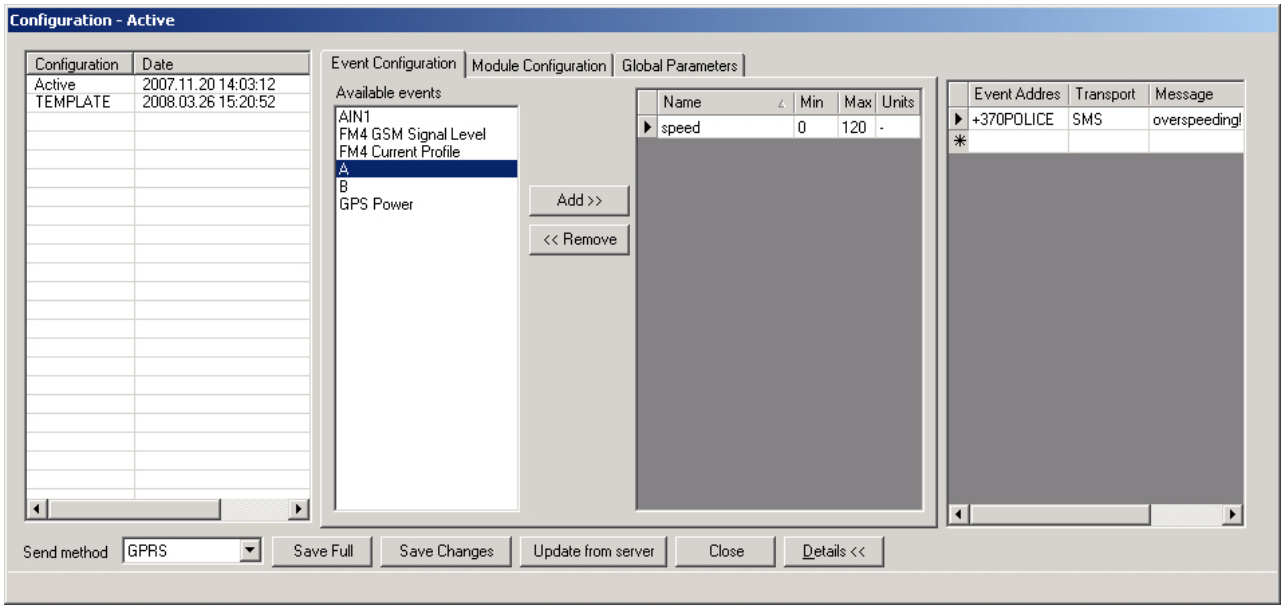
Another window has 'Event Configuration', 'Module Configuration' and 'Global Parameters'. 'Module Configuration' and 'Global Parameters' have same interface as FM4/FM2 configurator and is described in FM4/FM2 User Manual. Note, that S-AVL application interface only allows configuring those IO elements that are enabled in database.

'Send Method' field identifies how configuration should be sent to FM4/FM2 – by GPRS, binary SMS or both. 'Save Full' button saves selected configuration as 'New' and renames it to 'Synchronizing' when server tries to contact module. 'Save Changes' only saves new changes since last active configuration, but have in mind, that first configuration for module always has to be saved using 'Save Full' option. 'Update From Server' refreshes available configurations list. It does not read current configuration from module, only refreshes status of all available configurations. 'Save as Template' saves currently selected configuration as template for one or more objects.

6.2 Event configuration

'Event Configuration' menu allows configuring events for IO elements. In the picture a sample is shown how to configure over-speeding event that will send SMS to defined recipient.

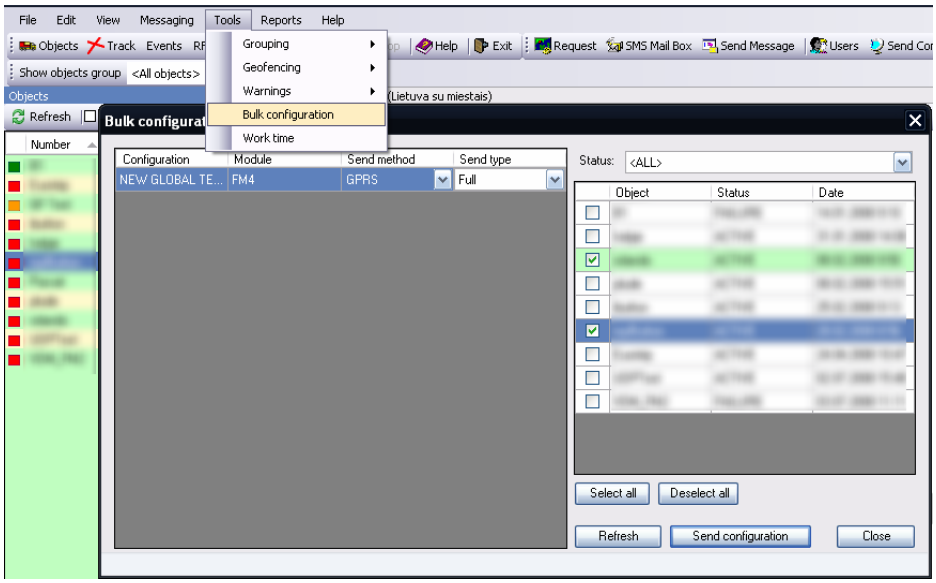
Choose an IO element from available in 'Available Events' window (more can be added by enabling IO elements in database) and click 'Add'. Enter minimum and maximum values in the fields 'Min' and 'Max'. When current value of IO elements drops below or raises above defined range, a message will be sent to the recipient entered in 'Event Address' field



6.3 Bulk configuration

S-AVL configuration can be performed for several objects at the same time by S-AVL administrators and Power users. Bulk configuration is available in Tools -> Bulk Configuration.

Bulk configuration can be created, edited or deleted by right-clicking in 'Bulk Configuration' window and selecting an appropriate action. The same rules apply to configuration methods as in simple configuration: there are tree available configuration send methods: GPRS, SMS and GPRS or SMS. There are two send types available to send: full configuration or only difference between bulk and native module configuration (native module configuration should be performed using S-AVL application. If you are not sure if module were configured using S-AVL application, please select send type 'Full').

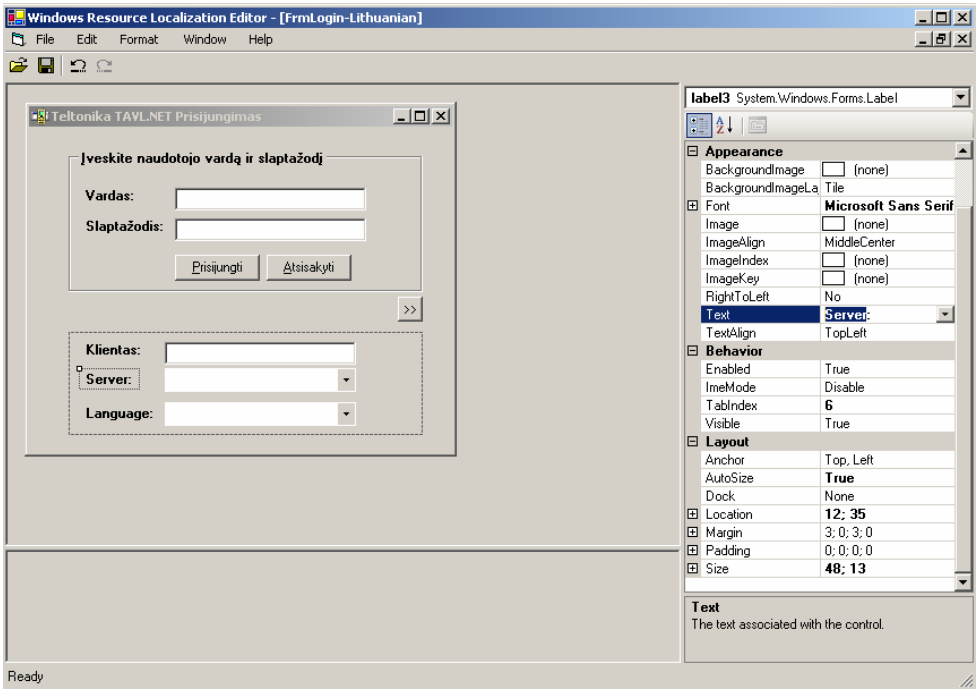


7. Localization

S-AVL language localization tool is used to build localized (translated) version of S-AVL application.

Modifying Files

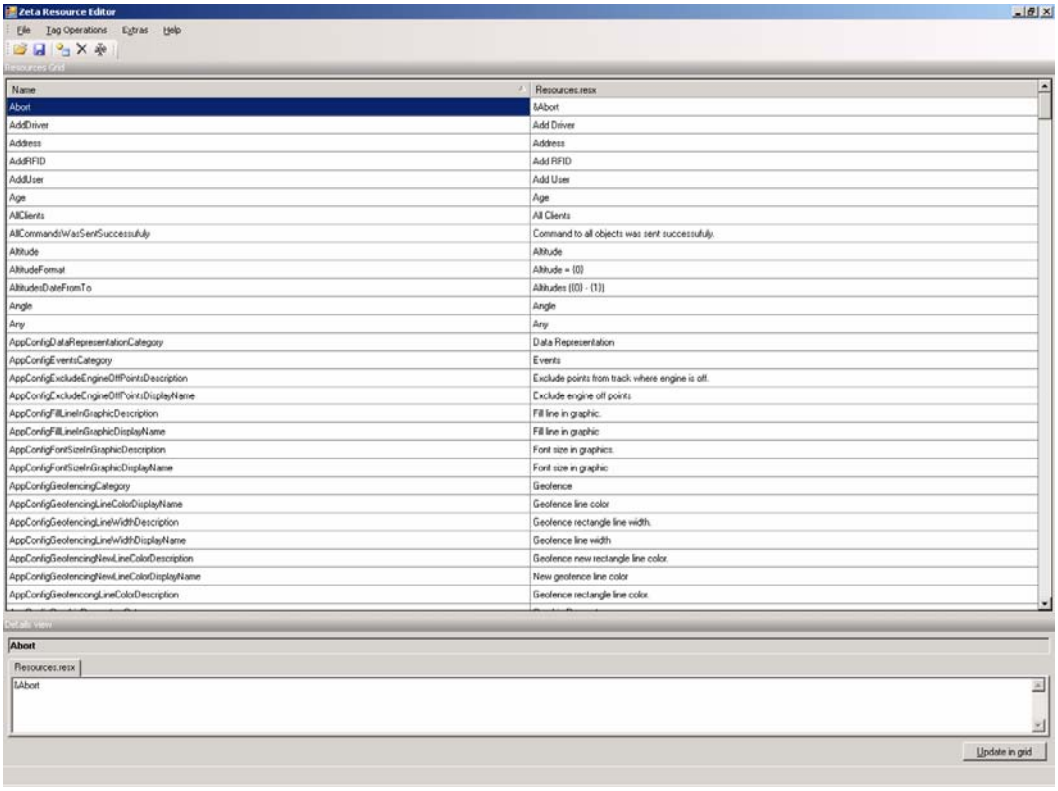
Extract Localization.zip and launch WinRes.exe from 'Start' – 'Programs' – 'Microsoft .NET Framework SDK v2.0' – 'Tools' – 'Windows Resource Localization Editor'. Open and modify the .resx files in your folder. If text is too long, nearby fields can be adjusted or moved so it would fit.



Modified files must be saved in form <Original Filename>.<Culture Name>.resx in the same folder (i.e. FrmLogin.resx → FrmLogin.lt.resx) simply by clicking 'Save As…' and choosing your language. Do not change original file name.

Some files do not contain material that is displayable in the tables and can not be edited with Windows Resource Localization Editor. An error "**Error** - InvalidDialogMissingName Valid dialog or user control resource files must be generated by the Visual Studio Form Designer and the Localizable property of the Form must be set to 'true'."is displayed in the window. In such cases, these files have to be edited with Zeta Resource Editor.

Open the table – on the right column a list of names available in S-AVL application is displayed.



Rename only text in this column and leave brackets and number as they are – changing these values might cause errors in application. Rename necessary fields and save the changes. Later rename the file so it has correct extension (i.e. lt.resx).

Compiling S-AVL Application

After changes were made, S-AVL application must be compiled. Run cmd.exe ("Start" - "Run" write "cmd" in the field, press "OK") and go to your localization folder (C:\Documents and Settings\<your user>\Desktop\Localization).

To move between directories in cmd use command "cd":

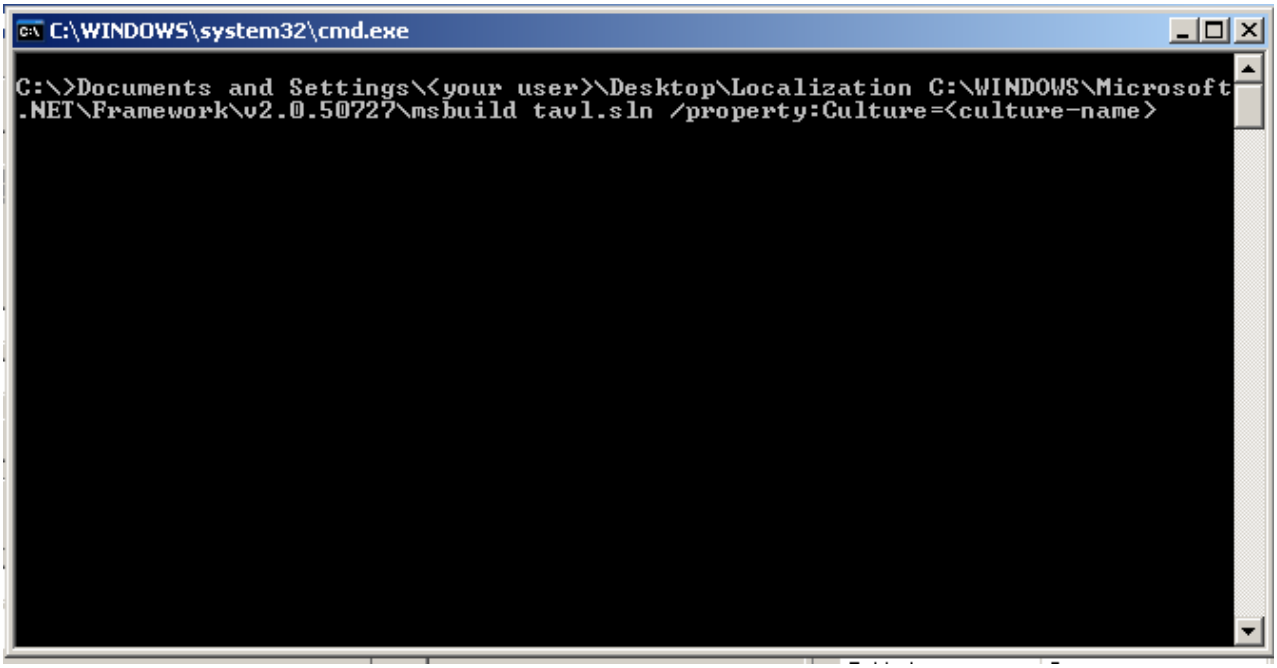
- cd <exact destination> - to move to directory you want.
- cd.. – move one directory back

Next element to type is exact path to your "msbuild.exe" file (C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\msbuild).

After this you can build solution (builds all projects) or single project.

- To build solution type:
  tavl.sln /property:Culture=<culture-name>
  e.g.: msbuild tavl.sln /property:Culture=lt
- To build single project type:
  <projectName.csproj> /property:Culture=<culture-name>

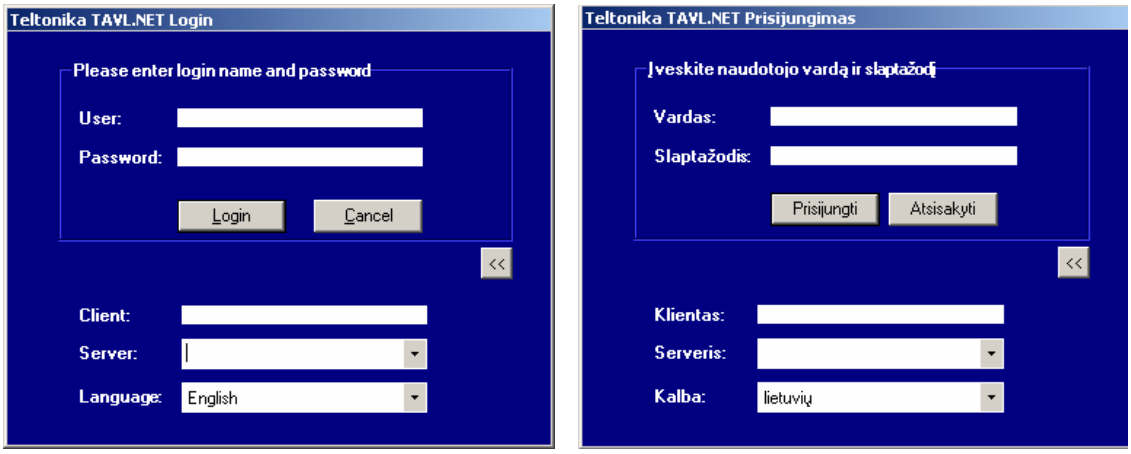
Final command line should look like this:



Note: if you get any errors about missing files during compilation process, launch WinRes.exe again and create missing files.

Copy new satellite assembly files (*.resources.dll) from bin folder to S-AVL application folder. Copy entire folder with name corresponding to your language (in this case – folder "lt") from the directory C:\Documents and settings\<your user>\Desktop\ Localization\tavl\bin\Debug and paste it to S-AVL application folder.

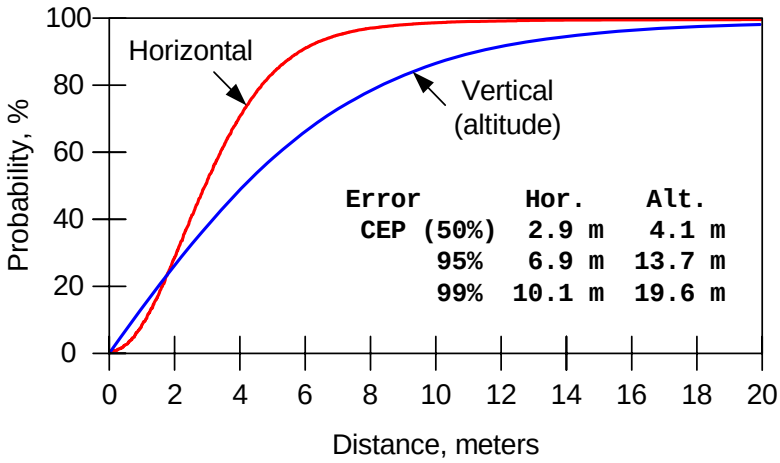
Next time when you run the S-AVL application, you will be able to set new language.



8. Frequently asked questions (FAQ)

1. Why doesn't objects trail match roads that are shown in the map? What is the accuracy of GPS?

Object trail doesn't coincide with roads shown in the maps because of GPS limited accuracy. GPS accuracy depends on location (geographic latitude, longitude), satellites' location and ionosphere's conditions. In perfect conditions (sunny weather, no clouds, in open area, without skyscrapers, woods) accuracy can be about 3 – 5 meters.



Usually accuracy is estimated using statistical method CEP (Circle of Equal Probability). This method allows us to consider, that in probability of 50%, object's coordinates' error does not exceed designated values.

Otherwise, roads in the map not always are defined very precisely (especially considering Eastern Europe). Another possibility is that new roads don't exist in the map.

2. Why do data transfers from server to application take so long?

Duration of data transfers from server to user application depends on amount of data and speed of Internet connectivity. While object registers many parameters very often grows data quantity. Then transfer time for long requested period of time could be very long. So if you want to increase data transfer time you should decrease requested data time period.

One more way to decrease data transfer time is to decrease frequency of object's parameters data (time T_1 should be not 1 minute but 2 – 3 minutes).

3. Why it is impossible to request current object position?

In most cases you are unable to receive information about current object's location, because it is out of GSM coverage (is in the sea, in deep woods, etc.)

4. It's one or two hours since module sent its data. Why is it not refreshed?

Module is sending data to the server at fixed time. If the connection is not possible (there is no GPRS context), the next sending will be at fixed time. Still You can send the request, and get the latest data. Also profile may define data acquirement less often (i.e. every 10 minutes when object is not moving) and setting allow only full packet sending.

5. Why only yesterdays data is shown?

Either module didn't sent data because it's not time to do it or it couldn't send it because of network problems. Solution is to configure module so it sends data at desired time.

6. How can I know objects location if it is not sending data by GPRS?

You can send a request and get the SMS with 24 coordinates (see chapter 4.4.4).

7. Why is object changing its coordinates even when engine is off?

It is because of GPS accuracy. If object is standing between tall buildings or in from of the wall, module doesn't see enough satellites to set its exact coordinates. Then each coordinate is calculated

with a slight error. Error depends on number of visible satellites. If object is standing between tall buildings or in front of a wall it may not be enough for module to set its position correctly.

8. I'm receiving incorrect time – it's always same interval ahead or behind current time.

This is happening because of incorrect timezone settings on PC. Please choose matching timezone in windows regional settings.

9. Changes Logsheet

Nr.	Date	New version number	Comments
	09-02-24	1.1	Updated downloads links